Work Plan

Alternative Area 2 Excavation Depths and Volumes

Introduction

EPA's October 12, 2012 letter to the West Lake Landfill Operable Unit 1 (OU-1) Respondents states that, during an early consultation with the National Remedy Review Board (NRRB), the NRRB indicated that the deeper radiological detections in borings WL-210 and WL-235 are unreliable. Consequently, EPA asked that the volume of radiologically-impacted material (RIM) considered for possible excavation under the "complete rad removal" alternatives be revised to exclude deeper intervals in soil borings WL-210 and WL-235 in Area 2.

Evaluation of the soil sample analytical results and the downhole gamma logging data during preparation of the SFS indicated that soil containing radionuclides above the levels used to identify material to be included within the scope of the two "complete rad removal" alternatives was potentially present within a deeper depth interval beneath the southwestern portion of Area 2. Specifically, elevated gamma peaks were identified on the downhole gamma logs at depths of 47.5 feet (ft) below ground surface (bgs) in WL-210 and 22.5 ft bgs in WL-235; however, the Remedial Investigation (RI) [EMSI, 2000] states (on p. 97) that boring WL-210 was re-logged because during the first logging attempt, material was knocked into the hole and that the presence of this material may have been the cause of a small poorly defined peak at the bottom of this boring. The RI also states (again on p. 97) that the presence of a poorly defined peak at the bottom of WL-235 may also be the result of RIM at shallow depths having been knocked into this borehole during drilling or logging activities.

Although the RI raised possible questions about the representativeness of the downhole gamma logs for the deeper intervals of these two borings, a soil sample obtained from boring WL-210 detected the presence of total Thorium-230+232 at a depth of 40 ft bgs at a level (18.6 pCi/g) above the cleanup level (7.9 pCi/g) used to evaluate potential excavation alternatives. A duplicate sample obtained from this same depth interval contained total thorium at 11.6 pCi/g. These samples were obtained from a depth of 40 ft, 10 feet above the bottom of the borehole. In addition, these samples were obtained during drilling of the borehole, prior to the downhole logging activities that may have resulted in surficial material being knocked into the hole. Therefore, these sample results likely represent actual conditions at the 40 ft depth interval in boring WL-210. The RI sampling did not include collection of a soil sample from the deeper portion of the WL-235.

Although uncertainty exists regarding the representativeness of the downhole gamma logs at these two locations, the soil sample result from the 40 ft depth in WL-210 combined with the downhole gamma logs were used to define an area and volume of a deeper interval of RIM occurrence beneath the southwestern portion of Area 2. This material, and the associated overburden material that would need to be removed to allow for excavation of this RIM, were included within the overall volumes of materials

that would need to be excavated if one of the "complete rad removal" alternatives were to be implemented at the site. (Note: Deeper intervals of radiologically-impacted material were also identified beneath other portions of Area 2 but are not the subject of this re-evaluation).

Because of the uncertainty associated with the downhole gamma logging at these two locations, EPA has indicated that the NRRB believes the radiological detections in the deeper portions of these two borings are unreliable. EPA has therefore requested that the volumes of materials that may be removed under a "complete rad removal" alternative be re-estimated to exclude the deeper depth intervals in borings WL-210 and WL-235.

An April 20, 2015, letter from EPA to the OU-1 Respondents requested that the Respondents perform additional characterization of RIM occurrences in Areas 1 and 2. A work plan for performance of the additional characterization was prepared and submitted to EPA on July 6, 2015. As part of the additional characterization of Area 2, the Respondents proposed to drill additional soil borings at the WL-210 and WL-235 locations, conduct downhole gamma logging of these holes and perform radiological scans of the core samples obtained from these holes, and submit samples from these core materials for offsite laboratory analyses. Collection of additional data from these two locations may resolve the uncertainty regarding deeper occurrences of RIM at these locations. Collection of additional data from other locations in Area 2 may also impact the need for, or approach to be taken with respect to, development of a revised volume of RIM in Area 2. Therefore, a two-pronged approach to revising the Area 2 volume calculations is proposed.

Approach

The following approach will be used to develop a revised excavation volume for Area 2 if the additional borings at the WL-210 and WL-235 locations do not confirm the presence of deeper RIM:

1. Revise the calculated volume of material to be excavated under the "complete rad removal" alternatives to incorporate the results of the Additional Characterization of Areas 1 and 2 and to eliminate deeper intervals in soil borings WL-210 and WL-235 and consequently to eliminate removal of the deeper interval of RIM from the southwestern portion of Area 2; and

2. Develop revised estimates of the potential risks to workers and the public, revised projected construction schedules, and revised cost estimates for excavation and offsite or onsite disposal based on inclusion of the results of the Additional Characterization of Areas 1 and 2 and the exclusion of the potential deeper occurrences of RIM beneath the southwestern portion of Area 2.

In the event that the drilling, logging, sampling and laboratory analyses associated with the re-drilling at these two locations confirms the presence of deeper occurrences of RIM, it is proposed that these results, along with the results of all of the other borings drilled as part of the Additional Characterization of Areas 1 and 2, be incorporated with all of the prior data and used for preparation of revised estimates of the extent, configuration and volume of RIM in Area 2. Under this scenario, the prior RI results that

indicated the presence of deeper RIM occurrences in the vicinity of RI borings WL-210 and WL-235 would continue to be considered in the evaluations.

Deliverables

The following deliverables will be prepared pursuant to this task

1. Recommendation for Path Forward – Based on the results of the additional characterization of Areas 1 and 2, in particular the re-drilling of RI soil borings WL-210 and WL-235 but also the results of deeper drilling elsewhere in Area 2, a letter will be prepared outlining the proposed approach relative to consideration of the RI results from borings WL-210 and WL-235. This letter will be submitted to EPA for concurrence/approval of the proposed approach with respect to the data obtained from RI borings WL-210 and WL-235 which may include (1) preparation of alternative estimates of the extent, configuration and volume of RIM in Area 2 that do not consider the results from these two borings; or (2) verification of the prior RI results and termination of all remaining efforts under this work plan.

2. Interim Deliverable – In the event that the additional drilling does not confirm the presence of deeper occurrences of RIM at the WL-210 and WL-235 locations, a brief memorandum will be prepared summarizing the revisions to the RIM extent and volumes resulting from exclusion of the deeper interval beneath the southwestern portion of Area 2. If the re-evaluation of the volume material results in significant changes in the amounts of materials that would be excavated under the "complete rad removal" alternatives, this memorandum will also include evaluations of potential risks, revised calculations of greenhouse gas emissions, revised anticipated project schedules, and revised anticipated costs for the two "complete rad removal" alternatives based on the assumption that the deeper intervals in borings WL-210 and WL-235 are not included in the volume of RIM material under the two "complete rad removal" alternatives.

3. SFS Revisions – Assuming that the additional drilling does not confirm the presence of deeper occurrences of RIM at the WL-210 and WL-235 locations, the existing SFS text, tables and appendices will be amended to include the results of alternative development and evaluation based on exclusion of the deeper intervals in borings WL-210 and WL-235 in conjunction with the existing discussions that include these depth intervals as presented in the current SFS report. Subject to EPA comments on the Interim Deliverable, the following specific revisions to the December 2011 SFS report are anticipated:

    a. Amend the text of the SFS as follows:
        i. Section 2.2.4 – Include discussion of the revisions/changes to the volume of RIM addressed by this alternative.
        ii. Section 5.3.1 – Include as part of the descriptions of the excavation and disposal alternatives the volumes of RIM and overburden material to be

excavated if the reported deeper occurrences in borings WL-210 and WL-235 are not considered in addition to the total volumes already presented in this section.

iii. Sections 6.2.2 and 6.2.3 – Include as part of the descriptions of the excavation and disposal alternatives the volumes of RIM and overburden material to be excavated if the reported deeper occurrences in borings WL-210 and WL-235 are not considered in addition to the total volumes already presented in this section.

iv. Sections 6.2.2.5 and 6.2.3.5 – Add to the discussions of Short-Term Effectiveness, in particular the Protection of the Community, Protection of Workers, and Time Until RAOs are Achieved, discussions relative to the reduced volume of material and consequently reduced time frames that would be associated with excavation and disposal alternatives if the reported deeper occurrences in borings WL-210 and WL-235 are not considered.

v. Sections 6.2.2.7 and 6.2.3.7 – Add to the discussion of Cost, the estimated costs to implement the excavation and disposal alternatives based on the reduced volume of material and consequently reduced time frames that would be associated with excavation and disposal alternatives if the reported deeper occurrences in borings WL-210 and WL-235 are not considered.

vi. Sections 7.2.3 (Short Term Effectiveness) and 7.2.5 (Cost) – Revise the comparative analysis of alternatives to reflect the differences between the short-term risks, schedules and costs that result from inclusion or exclusion of the deeper intervals in borings WL-210 and WL-235.

vii. Table 10 – Amend this Table to include the results of the evaluation of the revised Area 2 volume alternative.

b. Amend the Appendices to the SFS as follows:

i. Appendix B – Develop and include an alternative excavation plan that does not include excavation of the deeper intervals at WL-210 and WL-235 and calculate the revised volume of RIM and overburden material to be excavated.

ii. Appendix H – Develop and include estimates of the potential risks to the community and workers based on the volumes of RIM and overburden material to be excavated and revised construction schedules if the deeper intervals in borings WL-210 and WL-235 are not considered.

iii. Appendix I – Prepare additional estimates of Greenhouse Gas Emissions associated with the “complete rad removal” alternatives under a scenario where the deeper intervals in borings WL-210 and WL-235 are not considered.

iv. Appendix J – Prepare additional construction schedules for the “complete rad removal” alternatives under a scenario where the deeper intervals in borings WL-210 and WL-235 are not considered.

v. Appendix J – Prepare additional estimates of the construction costs (both fiscally constrained and not-fiscally constrained) for the "complete rad removal" alternatives under a scenario where the deeper intervals in borings WL-210 and WL-235 are not considered.

Changes may also be made to other sections of the report as necessary to reflect the results of the evaluations of the revised Area 2 depth and volume estimates, including but not limited to changes to the evaluation of the implementability of the alternatives.

Clarifications by EPA

No additional information or clarifications are being requested from EPA at this time relative to this task.

Anticipated Schedule

It is anticipated that the letter containing recommendations regarding the path forward on this issue can be prepared and submitted to EPA within three weeks of completion of validation of the laboratory results for all of the samples obtained from the re-drilling in the vicinity of RI borings WL-210 and WL-235. Assuming the results of the additional investigation confirm the presence of deeper occurrences of RIM at these locations, and EPA concurs with this conclusion, no additional work is anticipated to be conducted pursuant to this work plan and all work will have been deemed complete upon receipt of a letter or other communication from EPA indicating its concurrence with this approach.

Although it was originally anticipated that it would take approximately two months to develop the interim summary memorandum, this schedule was based on revising the estimated extent, configuration and volume of RIM in Area 2 based solely on disregarding the results from the deeper intervals in borings WL-210 and WL-235. The Additional Characterization of Areas 1 and 2 is anticipated to provide additional data not only from the two borings to be drilled in the vicinity of RI borings WL-210 and WL-235 but also at approximately 16 other locations in Area 2. Therefore, preparation of revised estimates of the extent, configuration and volume of RIM in Area 2 cannot be performed until all of the results of the Additional Characterization of Areas 1 and 2 have been obtained, tabulated, plotted, reviewed and reported. EPA previously indicated that it will require the Respondents to prepare a Comprehensive Report of the results of the NRC and RI investigations, the Phase 1 and Phase 1D Investigations, and the Additional Characterization of Areas 1 and 2. Therefore, preparation of an Alternative Estimate of the Volume of RIM in Area 2 is dependent upon completion of the Comprehensive Report. It is estimated that it will take approximately three (3) months to prepare estimates of the extent, configuration and volume of RIM in Area 2 after completion of the Comprehensive Report. However, in addition to preparation of an Alternative Area 2 RIM Volume, once the Comprehensive Report is prepared, revisions to the extent, configuration and volume of RIM associated with the two "Complete Rad Removal" alternatives and the three partial excavation alternatives identified by EPA will also need to be performed. Preparation of estimates of the extent, configuration and volumes of RIM associated with these alternatives will require many of the same resources such that although any one of them may be completed within a three month time frame, all

of them cannot be completed within such a time frame. The Respondents recommend that the initial efforts be directed toward preparation of revised estimates of the extent, configuration and volume of RIM associated with the two "Complete Rad Removal" alternatives first, followed by preparation of volume estimates for the three partial excavation alternatives, and, last, preparation of the volume estimate for the revised Area 2 volume (if necessary). However, the Respondents will seek direction from EPA as to prioritization of the order in which revised estimates of the extent, configuration and volumes of RIM for each of the alternatives should be prepared.

Preparation of a Supplemental SFS report that includes the results of the revised Area 2 excavation volumes and associated evaluations, as described in the interim deliverable summary memorandum, will be performed once EPA comments on the interim deliverable are received and in conjunction with revisions to the existing SFS report required to address the results of the various other additional tasks EPA has requested.

References

Engineering Management Support, Inc. (EMSI), 2011, Supplemental Feasibility Study, Radiologically-Impacted Material Excavation Alternative Analysis, West Lake Landfill Operable Unit-1, December 16.

EMSI, 2000, Remedial Investigation, West Lake Landfill Operable Unit-1, April 10.

U.S. Environmental Protection Agency, 2015, Letter from Alyse Stoy (EPA) to William Beck et al., (OU-1 Respondents) RE: In the Matter of Cotter Corporation (NSL), and Laidlaw Waste Systems (Bridgeton), Inc., and Rock Road Industries, Inc., and the U.S. Department of Energy Administrative Order on Consent, EPA Docket No. VII-93-F-0005, April 20.